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New data on the dusty wings from Coquimbo, Patagonia and Tierra del Fuego (Neuroptera, Coniopterygidae)

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Abstract

New data on the biology, distribution and morphology of seven Neotropical dusty wings species collected in 52 locations in Coquimbo, Patagonia and Tierra del Fuego (Chile, Argentina) are given. *Incasemidalis chilensis* MEINANDER, 1990 and *Coniopteryx chilensis* MEINANDER, 1990 are recorded as new from Argentina, and the presence of *Coniopteryx callangana* ENDERLEIN, 1906 in this country is confirmed. The larva of *Semidalis kolbei* ENDERLEIN, 1906 is described and *Pampoconis uncinata* ADAMS, 1973 is proposed as a new synonym of *Pampoconis latipennis* MEINANDER, 1972.

Key words: Neuroptera, Coniopterygidae, Neotropical, Coquimbo, Patagonia, Tierra-Fuego, Argentina, Chile, faunistics, taxonomy, larva.

Zusammenfassung

Neue Daten zur Biologie, Verbreitung und Morphologie von sieben neotropischen Coniopterygiden, die von 52 Fundorten in Coquimbo, Patagonien und Tierra del Fuego (Chile, Argentinien) stammen, werden präsentiert. *Incasemidalis chilensis* MEINANDER, 1990 und *Coniopteryx chilensis* MEINANDER, 1990 werden erstmals für Argentinien nachgewiesen, und das Vorkommen von *Coniopteryx callangana* ENDERLEIN, 1906 in diesem Land wird bestätigt. Die Larve von *Semidalis kolbei* ENDERLEIN, 1906 wird beschrieben, und *Pampoconis uncinata* ADAMS, 1973 wird als neues Synonym zu *Pampoconis latipennis* Meinander, 1972 vorgeschlagen.

Introduction

The family Coniopterygidae is one of the most interesting in the order Neuroptera due to its wide (almost cosmopolitan) geographical distribution, its high number of species (almost 450) and of individuals of which its populations usually consist, and in particular for its importance in the control of small phytophagous pests (MEINANDER 1972, 1990; NEW 1989, 2001; MONSERRAT et al. 2001).

It is accepted that the best known dusty wings fauna is the European, followed by the Western Palaearctic, Afro-tropical and remaining regions (MEINANDER 1972, 1990; ASPÖCK et al. 1980, 2001; ASPÖCK & HÖLZEL 1996). Related to the Neotropical region, and with regard to the countries studied (STANGE 1967; PENNY 1977) some recent articles have been published after the revisions of MEINANDER 1972 and 1990 (FLINT 2002; MEINANDER 1992, 1995, 2002; MEINANDER & PENNY 1982; MONSERRAT 1983, 1985; GONZÁLEZ OLAZO 1984, 1996; MONSERRAT & BAYO 1995; PENNY 1998, 2002; PENNY & LEE 1996; SZIRAKI 1996; SZIRAKI & GREVE 2001; PÉREZ GELABERT & FLINT 2001), but the general knowledge about this region is still very unsatisfactory and fragmentary. From the existing bibliographical data can be noticed the scarceness of articles more or less related to Coquimbo, Patagonia and Tierra del Fuego (ADAMS 1973, MEINANDER 1972, 1973, 1974, 1983, 1986, 1990; MONSERRAT 1989) and the almost general lack of data south of parallel 35°S, with very wide unprospected areas and a general incognizance of the faunistics, larval stages and general biology of the known speies from these geographical areas.

In the current publication, we are attempting to contribute new data on the taxonomy, geographical distribution, larval stages, biology, morphology or variability of some species of the family present in this peculiar and wide area of the South American continent.

Material and Methods

The data published in this article correspond to three groups of samplings. One was carried out in Coquimbo (Chile) during October 2001, and two in Patagonia and Tierra del Fuego (Argentina-Chile) during January 1995, and from December 2001 to February 2002, carrying out itineraries of samplings that, according to our possibilities, covered the studied area for the most part and reached the south of the continent (MONSERRAT 2003; MONSERRAT & FREITAS 2005).

The administrative location, the denomination, the altitude above/below sea level, the geographical coordinates of the locations and the data where specimens have been found are noted, numbered and ordered by their increasing latitude in the following list.

1 Chile: IV Región, Coquimbo, Elqui, Cuesta de Buenos Aires, Quebrada Honda, 60m, 71°12'W, 29°29'S.
2 Chile: IV Región, Coquimbo, Elqui, Caleta los Hornos, 40m, 71°18'W, 29°36'S.
3 Chile: IV. Región, Coquimbo, Elqui, Cuesta Porotitos, 120m, 71°18'W, 29°49'S.
4 Chile: IV Región, Coquimbo, Elqui, Punta Teatinos, 140m, 71°18'W, 29°50'S.
5 Chile: IV Región, Coquimbo, Limar, Ovalle, Puente Panulcillo, 80m, 71°14'W, 30° 26'S.
6 Chile: IV Región, Coquimbo, Limar, Termas de Soco, Puente Socos, 160m, 71°33'W, 30°39'S.

7 Argentina: Prov. de Buenos Aires; Garganta Olvidada, Parque Tornquist, 500m, 62° 03'W, 38°03'S.
8 Argentina: Prov. de Buenos Aires; Tornquist, Cerro Tornquist, 400m, 62°10'W, 38° 04'S.
9 Argentina: Prov. de Buenos Aires; Napostá, Bahía Blanca, 20m, 62°10'W, 38°22'S.
10 Argentina: Prov. de Buenos Aires; Médanos, 45m, 63°05'W, 38°40'S.
11 Argentina: Prov. de Buenos Aires; Bahía Blanca, 20m, 62°15'W, 38°43'S.
12 Argentina: Prov. de Buenos Aires; Villarino, Laguna de Chasicó - Estancia La Aurora, entre -24 y -45m, 62°55'W, 38°45'S.
13 Argentina: Prov. de Buenos Aires; Médanos, Villarino, 33m, 62°40'W, 38°49'S.
14 Argentina: Prov. de Buenos Aires; Pehuen Có, 10m, 61°37'W, 39°00'S.
15 Argentina: Prov. de Buenos Aires; Cabeza de Buey, 30m, 62°30'W, 39°10'S.
16 Argentina: Prov. de Buenos Aires; Mayor Buratovich, Villarino, 60m, 62°38'W, 39° 16'S.
17 Chile: X Región. Osorno; E. Entre Lagos, Futachin, 280m, 72°24'W, 40°43'S.
18 Argentina: Prov.de Rio Negro; Paso Chacabuco, Río Limay, 510m, 71°02'W, 40°45'S.
19 Argentina: Prov. de Neuquén; Villa La Angostura, 760m, 71°40'W, 40°47'S.
20 Argentina: Prov. de Buenos Aires; Carmen de Patagones, Ribera Río Negro, 10m, 62° 49'W, 40°48'S.
21 Chile: X Región; Osorno, N. Puerto Octay, Río Arenales, Carril, 100m, 72°51'W, 40° 56'S.
22 Chile: X Región; Osorno, E. Puerto Octay, La Picada, Puente del Rio Blanco, 250m, 72°33'W, 41°00'S.
23 Chile: X Región; Llanquihue, Frutillar Bajo, 60m, 73°02'W, 41°07'S.
24 Argentina: Prov. de Rio Negro; San Carlos de Bariloche, 790m, 71°17'W, 41°08'S.
25 Chile: X Región; Llanquihue, Ensenda, 80m, 72°33'W, 41°14'S.
26 Chile: X Región; Llanquihue, NE. Puerto Montt, Correntoso, 220m, 72°45'W, 41°21'S.
27 Chile: X Región; Llanquihue, E. Lenca, Chaica, 500m, 72°37'W, 41°36'S.
28 Chile: X Región; Llanquihue, Calbuco, Punta Guatral, 10m, 73°02'W, 41°42'S.
29 Chile: X Región; Llanquihue, Maullín, Colaco, 10m, 73°22'W, 41°46'S.
30 Argentina: Prov. de Río Negro; N. El Bolsón, El Foyel, 800m, 71°26'W, 41°48'S.
31 Argentina: Prov. de Río Negro; N. El Bolsón, Los Repollos, Cerro Saturnino, 780m, 71°25'W, 41°50'S.
32 Chile: X Región, Chiloé; Chacao, Caulin and Pupelde, 40m, 73°32'W, 41°51'S.
33 Argentina: Prov. de Chubut; SE. El Bolsón, El Hoyo, 330m, 71°27'W, 42°05'S.
34 Argentina: Prov. de Chubut; SW. El Bolsón, Lago Puelo, 510m, 71°40'W, 42°10'S.
35 Chile: X Región, Chiloé; Degan, Puente Puntra 70m, 73°44'W, 42°13'S.
36 Argentina: Prov. de Chubut; Lago Epuyén, Puerto Patriada, 640m, 71°30'W, 42°13'S.
37 Chile: X Región, Chiloé; Dalcahué, Piruquina, 90m, 73°40'W, 42°22'S.
38 Chile: X Región, Chiloé; Dalcahué, Mocopulli, 70m, 73°43'W, 42°22'S.
39 Chile: X Región, Chiloé; Isla Quinchao, SE. Achao, Putique, 90m, 73°25'W, 42°32'S.
40 Chile: X Región, Chiloé; Isla Lemey, Puqueldón, 50m, 73°40'W, 42°35'S.
41 Chile: X Región, Chiloé; Isla Lemuy, San Agustín, 80m, 73°39'W, 42°37'S.
42 Chile: X Región, Chiloé; Hullinco, Chonchi, 150m, 73°53'W, 42°42'S.
43 Argentina: Prov. de Santa Cruz; El Calafate, Punta Bandera, 190m, 72°47'W, 50°58'S.
44 Chile: XII Región, Última Esperanza; Parque Nacional Torres del Paine, Laguna

Guanaco, 200m, 72°50'W, 51°01'S.

45 Chile: XII Región, Última Esperanza; Parque Nacional Torres del Paine, Pehoe, 120 m, 73°00'W, 51°05'S.

46 Chile: XII Región, Última Esperanza; Parque Nacional Torres del Paine, Refugio Lago del Toro, 100m, 72°58'W, 51°10'S.

47 Chile: XII Región, Última Esperanza; N. Puerto Natales, Dos Lagunas, 180m, 72°28' W, 51°22'S.

48 Chile: XII Región, Última Esperanza; Monumento Natural Cueva del Milodón, 200 m, 72°35'W, 51°33'S.

49 Chile: XII Región, Última Esperanza; S. Puerto Natales, Las Lagunillas, 230m, 72°05' W, 51°53'S.

50 Chile: XII Región, Magallanes; N. Villa Tehuelches, Puerta del Monte, 120m, 71°20' W, 52°14'S.

51 Chile: XII Región, Magallanes; Punta Arenas, Reserva Forestal Laguna Parrillar and Rio Verde, Punta de San Juan, Punta de Santa María, 80m, 71°15'W, 53°24'S.

52 Chile: XII Región, Magallanes; Lago Blanco, 500m, 68°57'W, 54°01'S.

The material was collected netting the arboreal and shrubby vegetation of each locality and, occasionally, some specimens were collected at light during the night. For each species a previously known general geographic distribution and recorded plant substrate are noted. For the enumeration of the studied material the contributed data are recorded numerically and chrononologically according to the above list, noting the date of capture, number of ♂♂, ♀♀ or larvae collected, vegetal substrates where the specimens were found, any data that contributes to a better knowledge of their biology, morphology or variability, and the institutions where this material was deposited. When listing the material studied, an asterisk (*) is used to indicate those specimens chosen for photographs.

The general taxonomy, systematic and terminolgy follow MEINANDER (1972, 1990). HOFFMANN (1997), ERIZE (2000a, b), and HAENE & GOSTARO (2001) are followed for the identification of trees and other plants.

Most of the collected material was deposited in the author's collection located in the Departamento de Zoología y Antropología Física of the Universidad Complutense of Madrid (Spain) except some specimens deposited in the collections of the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" of Buenos Aires (MACN) and the Museo Nacional de Historia Natural de Santiago de Chile (MNHN).

Results

Aleuropteryginae ENDERLEIN, 1905

***Pampoconis latipennis* MEINANDER, 1972**

A species recorded from Argentina (Río Negro Province) and Chile (Osorno, Valdivia and Aysén Provinces), with an almost unknown biology (collected in January, February and September, from 6 to 330 m, and without any plant substrate record).

We have collected 8 specimens on *Luma apiculata* (DC.) BURRET, Myrtaceae, 7 on *Drimys winteri* FORST, Winteraceae, 6 on *Nothofagus dombeyi* (MIRBEL), Fagaceae, 3 on *Aristotelia chilensis* (MOL.), Eleocarpaceae, 2 on *Amomirthus luma* (MOL.) LEGRAND, Myrtaceae, 1 on *Pilgerodendron oviferum* (DON.) FLOR, Cupresaceae, and 1 on an un-

identified arboreal substrate, between 10 and 510 m, and in a scarce latitudinal amplitude (40°56' - 42°35' S). Peritrophic membranes of some specimens studied contained portions of unidentified arthropods.

The systematic position of the southern South American genus *Pampoconis* MEINANDER, 1972 and some of its six described spcies, is far from being satisfactory because all the species descriptions were based on a single male specimen (MEINANDER 1972, 1973, 1974, 1990; ADAMS 1973), mostly without any later recorded specimens, and with a certain variability in some of the described generic and specific characters (MEINANDER 1979; ADAMS 1973).

Now, with 28 new collected specimens of *Pampoconis latipennis*, some of them collected at the type locality, some comments must be made related to *Pampoconis uncinata* ADAMS, 1973 (a sympatric species known from four specimens, recorded from Chile: Talca, Valdivia and Osorno Provinces, and collected in September, November and December, from 40 to 900m).

The unsclerotized vertex without median sclerotized band recorded by ADAMS 1973 indeed exists not only in male but also in female specimens (Fig. 9). The number of antennal segments (27-28 in ♂♂ of *P. latipennis* and 26 in ♂♂, 27 in ♀♀ of *P. uncinata*) recorded by ADAMS 1973, comes into the variability of our now reported data (25, 26, 26, 26, 26, 27, 27, 27, 27, 27, 28, 28 in ♂♂ and 24, 25, 25, 25, 26, 26 in ♀♀). The differences in the pronounced forward curvature at the end of R and Rs_1 and the non-sinuous CU_P in the fore-wings can not be considered as valid characteristics to differentiate this species from *Pampoconis uncinata* ADAMS, 1973, due to the scarceness of sclerotization of these veins in the wing apex, and it seems to be a very variable character, even in the same specimen. The shape of ectoproct caudal margin is always smoothly rounded and not angulated as MEINANDER 1972 suggested, and ADAMS 1973 noted for both species. Also both species, and not only *P. uncinata*, have an ectoproct spine, as MEINANDER 1972 (Fig. 90 A) suggested. The hypandrium is present as a little sub-triangular plate as ADAMS 1973 quotes and later MEINANDER 1979 refers. The shape of the stylus can no longer be used as a differential character to distinguish this species and *Pampoconis uncinata* ADAMS, 1973, due to the great variability found in this character in the current studied specimens, varying according to the specimen and its inclination on its membranous basis (Fig. 1). The morphologically named penis of its male genitalia represents indeed a real functional penis during the copula (Fig. 10), penetrating into the female genital ducts (Fig. 11), and it seems to have also an erection process with changes in its distal width, with medial contact or not of its posterior plates and changes in the protruding membranous distal lobe. These questions are the cause of the different opinions about the penis morphology in these species (MEINANDER 1972; ADAMS 1973).

After this, non of the differences recorded by ADAMS 1973 to distinguish *Pampoconis uncinata* from *Pampoconis latipennis* remains sustainable, and a new synonymy is proposed: *Pampoconis uncinata* ADAMS, 1973: 251 **syn. nov.** = *Pampoconis latipennis* MEINANDER, 1972: 159.

Studied material: 21: 30.I.2002, 1♂* 1♀* (Figs 10, 11). 23: 30.I.2002, 1♂. 25: 25.I. 2002, 5♂♂, 25.I.2002, 2♂♂ (MNHN). 26: 29.I.2002, 2♂♂. 27: 29.I.2002, 1♂. 28: 4.I. 1995, 1♀. 32: 26.I.2002, 2♂♂ 1♀. 33: 5.II.2002, 2♂♂, 5.II.2002, 1♂ (MACN). 34: 5.II. 2002, 2♂♂ 2♀♀. 38: 28.I.2002, 1♀. 40: 27.I.2002, 3♀♀* (Fig. 9).

Coniopteryginae ENDERLEIN, 1905

***Coniopteryx (Coniopteryx) callangana* ENDERLEIN, 1906**

A widely recorded species from Peru, Venezuela, Bolivia, Mexico and Brazil, but with an almost unknown biology. Records from Argentina (Buenos Aires) given by NAVÁS 1928 where questioned by MEINANDER 1972, 1974, 1981, 1990. We confirm now this species from Argentina with new records.

Only one reference to arboreal substrate and other to *Acacia* sp. was the known plant substrate preferences for this species. We now give new data about it. The peritrothic membrane of some of the studied specimens included very abundant fragments of adults and nymphs of Acari, Eriophyoidea: Rhyncaphytoptidae.

Studied material: 10: 28.II.2002, 1♂ on *Schimus fasciculatus* (GR.) JOHNST., Anacardiaceae. 12: 22.XI.2001, 1♀, 19.XII.2001, 3♀♀, 28.II.2002, 1♂ 2♀♀* (Fig. 15) on *Prosopis caldenia* BORK., Mimosaceae.

***Coniopteryx (Scotoconiopteryx) angustipennis* ENDERLEIN, 1906**

An enigmatic species described from Paraguay (San Bernardino) and recorded or listed from Argentina (Buenos Aires, San Miguel, Santa Fe) by ENDERLEIN 1908, 1930; NAVÁS 1933; COSTA LIMA 1943; STANGE 1967 and MEINANDER 1972, 1981. Assigned to subgenus *Scotoconiopteryx* by MEINANDER, 1972, its very elongate wings (ENDERLEIN 1906; MEINANDER 1972) let it remain as a valid species, but the male genitalia is not yet described.

Two female specimens, also with elongated wings, could belong to this species. Flagellar segments in these specimens are unusually long (Fig. 14) if we compare them with those of *Coniopteyx (Coniopteryx) callangana* ENDERLEIN, 1906 (Fig. 15), and could give us new data on its external morphology. Female genitalia (Figs 16, 17) seems similar, but not equal, to some other South American female *Conipteryx* spp. figured by MEINANDER (1972, 1974, 1980). The peritrothic membrane of the studied specimens included very fragmented adults and nymphs of Acari, Eriophyoidea: Rhyncaphytoptidae.

Studied material: 12: 27.II.2002, 2♀♀* (Figs 14, 16, 17) on *Prosopis caldenia* BORK., Mimosaceae.

***Coniopteryx (Scotoconiopteryx) chilensis* MEINANDER, 1990**

A species known by two single male specimens, collected at 1200m in Chillán (Chile).

A single dead and dry male specimen collected in a lamp ceiling together with four dead and dry females seems to belong to this species, according to data given by MEINANDER (1990), but some differences must be noted. So the gonarcus seems to be medially interrupted (Fig. 2), terminal processes of hypandrium are not small and acute, but blunt, quadrangular (Fig. 2) and strongly inside curved (Figs 3, 6), and some other slight differences in the shape of parameres and styli (Figs 2, 4, 5) can be noted.

Female specimens collected with this male seem very similar to those previously recorded as *Coniopteryx (Scotoconiopteryx) angustipennis* ENDERLEIN, 1906, also with very long flagellar segments (similar to Fig. 14) and genitalia (similar to Figs 16, 17), but with less narrow and elongate wings.

The peritrophic membrane of some of the specimens studied included fragments of Acari, Raphignathoidea: Stigmaeidae. For the time being, and due to the fact that we have

only a single male specimen, we prefer to attribute its characteristics to the variability of this species.

Studied material: 11: w.d., 1♂ 4♀♀, at light.

***Stangesemidalis subandina* GONZÁLEZ OLAZO, 1984**

A species only twice recorded, known from the N.W. of Argentina (Salta, Catamarca, La Rioja and San Luis Provinces), and collected from March to May and from September to January, between 539-1950m. No other data on its biology is known.

A single male specimen, also collected in Argentina, but at a much more south latitude (Buenos Aires Province) and low altitude (-24 y -45m) is assigned to this species according to the morphological data given by GONZÁLEZ OLAZO 1984 and MEINANDER 1990, and a wider distribution and ecological requirements can be suspected. The antenna of the specimen has 30 segments, and its male genitalia is figured in order to complement the data given by GONZÁLEZ OLAZO 1984 and MEINANDER 1990. The penis in this species consists of two cylindrical rods and not of a medial triangular single plate as MEINANDER 1990 indicates (Figs 7, 18, 19).

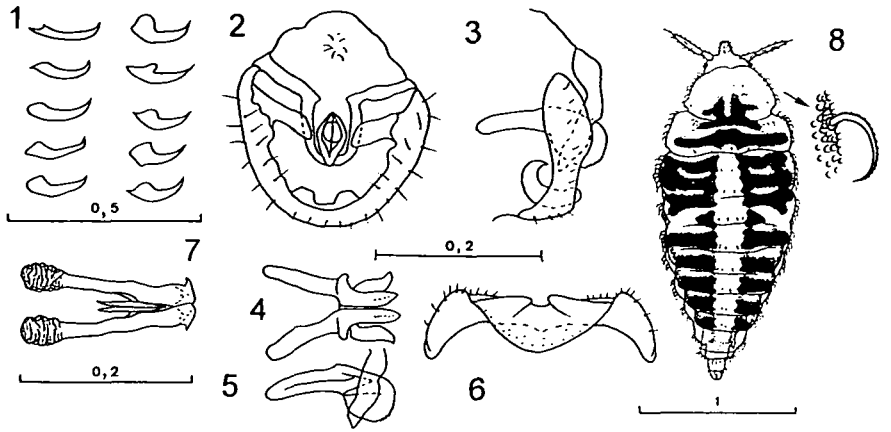
Studied material: 12: 28.II.2002, 1♂* (Figs 18, 19), on *Schimus fasciculatus* (GR.) JOHNST, Anacardiaceae.

***Semidalis kolbei* ENDERLEIN, 1906**

A widely recorded species from Argentina (Neuquén, Río Negro and Chubut Provinces) and Chile (from Atacama, Coquimbo, Aconcagua to Magallanes, Tierra del Fuego Provinces), but with an almost unknown biology (collected between January to April and between August to December, from 0-1350m, and with a few plant substrate records, only in *Nothofagus* forests). According to MEINANDER 1974, 1983 this species represents the most common dusty wings species in these parts of Chile and Argentina, and also, according to our data, it represents the most eurioic, frequent and abundant dusty wings species in the now prospected locations.

We have collected it on very diverse plant substrates: 66 imagoes on *Austrocedrus chilensis* (DON.) FLORIN & BOUTLEJE, Cupresaceae, 58 on *Luma apiculata* (DC.) BURRET, Myrtaceae, 47 on *Aristotelia chilensis* (MOL.), Eleocarpaceae, 45 imagoes and 2 larvae on *Drimys winteri* FORST, Winteraceae, 41 imagoes on *Schimus fasciculatus* (GR.) JOHNST, Anacardiaceae, 32 on *Nothofagus pumilio* (POEPP. & ENDEL.) Fagaceae, 32 on *Lomatia hirsuta* (LAM.) Protaceae, 28 on *Pinus radiata* D.DON, Pinaceae, 20 on *Aextoxicon punctatum* RUIZ & PAV., Aextoxicaceae, 20 on mixed arboreal substrate, 19 on *Nothofagus dombeyi* (MIRBEL) Fagaceae, 18 on *Chusquea culeou* E.DESK, Gramineae, 11 on *Desfontainia spinosa* R. & P., Desfontainiaceae, 9 on *Nothofagus betuloides* (MIRB.) BLUME, Fagaceae, 8 on *Ugni molinae* TURCZ., Myrtaceae, 7 on *Bahia ambrosioides* LAG., Cistaceae, 7 errant, 5 on *Amomirthus luma* (MOL.) LEGRAND, Myrtaceae, 5 on *Pinus halepensis*, MILL., Pinaceae, 4 on *Tepualia stipularis* (HOOK, FIL), GRISEBOCH, Myrtaceae, 3 in under wood of *Luma apiculata* (DC.) BURRET, Myrtaceae, 2 on *Nothofagus antarctica* (FORST.), Fagaceae, 2 on *Nothofagus nitida* (PHIL.), Fagaceae, 1 on *Nocotiana glauca* GRAHAM, Solanaceae, 1 on *Acacia caven* (MOLINA), Mimosaceae, and 1 at light.

The species was collected in a low altitudinal amplitude (between 10 and 800m) and it was observed several times as an active flyer during the day. Sometimes it was seen as a very abundant species, with hundreds of specimens in a single tree (*Austrocedrus chilen-*

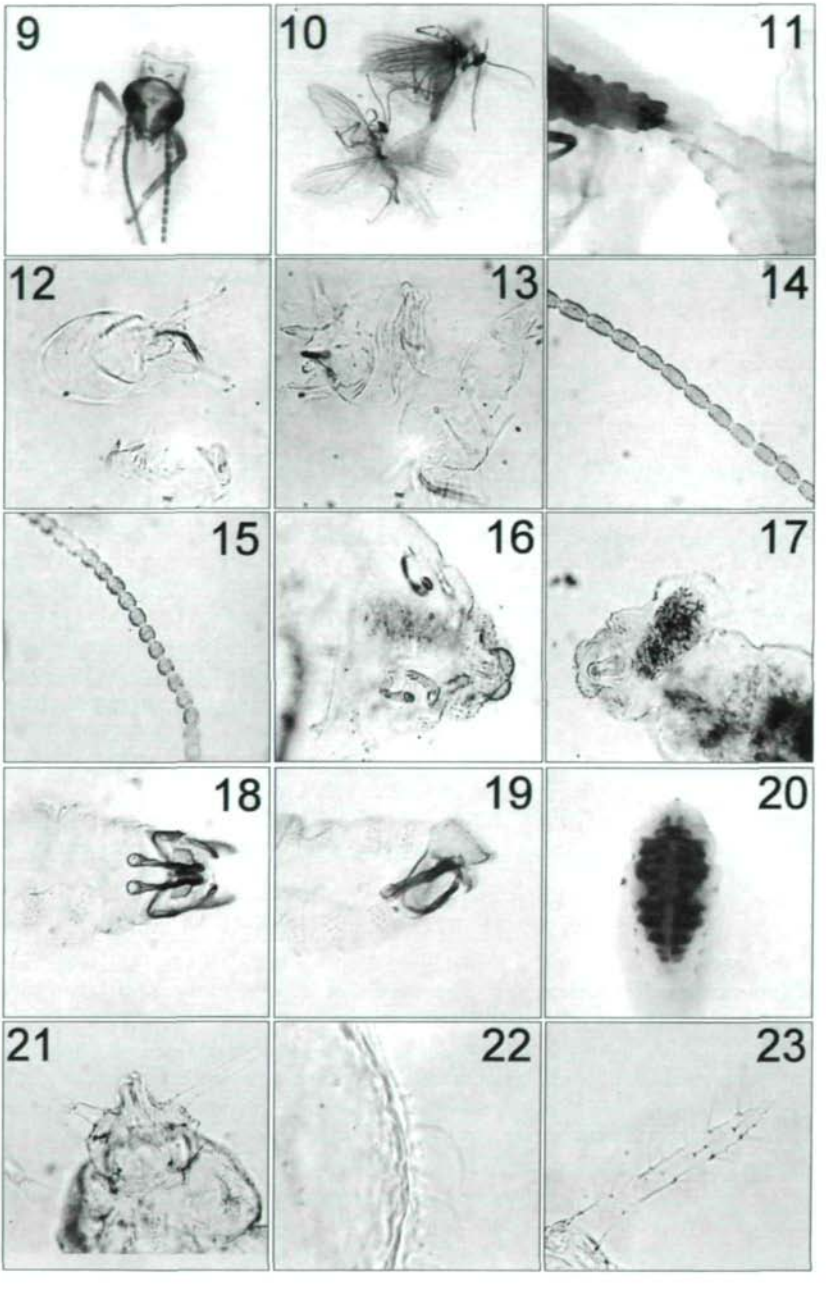


Legends of Figures 1-8

1: Variation in the lateral shape of the male stylus in some of the specimens studied of *Pampoconis latipennis* MEINANDER, 1972.
2: Male abdomen of *Coniopteryx (Scotoconiopteryx) chilensis* MEINANDER, 1990, caudal.
3: Ditto, lateral.
4: Ditto, parameres and part of the stylus, dorsal.
5: Ditto, lateral.
6: Ditto, hypandrium, internal - dorsal.
7: Parameres and penis of *Stangesemidalis subandina* GONZÁLEZ OLAZO, 1984, ventral.
8: Larva of *Semidalis kolbei* ENDERLEIN, 1906, dorsal, with a seta magnified.
Scales in mm.

Legends of Photographs Plate Figures 9-23

9. Female head capsule of *Pampoconis latipennis* MEINANDER, 1972.
10. Copula in *Pampoconis latipennis* MEINANDER, 1972.
11. Ditto, particular.
12, 13. Fragments of adults and nymphs of *Acari*, Eriophyoidea: Rhyncaphytoptidae found in the gut of *Semidalis kolbei* ENDERLEIN, 1906.
14. Flagellum of female assigned to *Coniopteryx (Scotoconiopteryx) angustipennis* ENDERLEIN, 1906.
15. Female flagellum of *Coniopteryx callangana* ENDERLEIN, 1906.
16, 17. Apex of the abdomen of female assigned to *Coniopteryx (Scotoconiopteryx) angustipennis* ENDERLEIN, 1906, ventral.
18. Apex of male abdomen of *Stangesemidalis subandina* GONZÁLEZ OLAZO, 1984, ventral.
19. Ditto, lateral.
20. Larva of *Semidalis kolbei* ENDERLEIN, 1906, dorsal aspect.
21. Ditto, head and pronotum tegument.
22. Ditto, lateral tegument setae.
23. Ditto, antenna, dorsal.



sis, *Luma apiculata*, *Aristotelia chilensis*, *Drimys winteri* or *Schimus fasciculatus*), a fact scarcely observed in other world samplings.

The peritrophic membrane of some of the specimens studied included fragments of unidentified arthropods, some legs of Acari, Oribatida, very abundant fragments of adults and nymphs of *Acari*, Eriophyoidea: Rhyncaphytoptidae (Figs 12, 13), fungi hyphen and siliceous material.

Two larvae, collected in the same location and on the same plant (*Drimys winteri* FORST., Winteraceae) as well as many other adult specimens, are assigned to this species. There is no doubt about its correct assignment because, according to their chaetotaxy (MONSERRAT et al. 2001), they belong to genus *Semidalis* (Figs 21, 23) and it is the only *Semidalis* species in the area.

The external morphology of these juvenile specimens has conspicuous diagnostic characters with dorsal transverse dark-brown stripes as shown in Figs 8, 20, and lateral setae strongly curved and very lightly serrate (Figs 8, 22), different from other described species in this genus (MONSERRAT et al. 2001).

Studied material: 1: 18.X.2001, 1♂ 2♀♀. 2: 18.X.2001, 1♂. 3: 18.X.2001, 2♀♀. 4: 21.X.2001, 1♂. 5: 20.X.2001, 22♂♂ 19♀♀. 6: 20.X.2001, 1♀. 7: 15.XI.2001, 1♀, 18.XII.2001, 1♂. 8: 15.XI.2001, 1♀, 18.XII.2001, 1♂. 9: 18.XII.2001, 1♂. 13: 19.XII. 2001, 1♀. 14: 8.XII.2001, 1♂. 15: 13.XII.2001, 1♀. 16: 3.XII.2001, 1♀. 17: 31.I.2002, 1♂ 2♀♀. 18: 9.II.2002, 6♂♂ 4♀♀, 9.II.2002, 3♂♂ (MACN). 19: 8.II.2002, 5♀♀. 21: 3.I.1995, 9♂♂ 16♀♀, 30.I.2002, 2♀♀. 22: 30.I.2002, 11♀♀. 24: 2.II.2002, 1♂. 25: 25.I.2002, 12♂♂ 28♀♀, 25.I.2002, 3♂♂ 5♀♀ (MNHN). 26: 29.I.2002, 1♂ 4♀♀. 27: 29.I.2002, 5♀♀. 28: 4.I.1995, 3♀♀. 29: 4.I.1995, 8♂♂ 7♀♀. 30: 4.II.2002, 8♂♂ 11♀♀, 7.II.2002, 14♀♀. 31: 4.II.2002, 12♂♂ 28♀♀. 32: 4.I.1995, 1♂ 12♀♀, 26.I.2002, 2♀♀, 2 larvae* (Figs 20-23). 33: 5.II.2002, 22♂♂ 49♀♀. 34: 5.II.2002, 28♂♂ 18♀♀. 35: 26.I.2002, 1♂ 3♀♀. 36: 6.II.2002, 7♂♂ 18♀♀. 37: 5.I.1995, 4♂♂ 3♀♀, 28.I.2002, 1♂ 1♀. 39: 28.I.2002, 3♀♀. 40: 27.I.2002, 4♀♀. 41: 27.I.2002, 3♀♀. 42: 5.I.1995, 6♂♂ 3♀♀. 43: 5.I.2002, 2♂♂ 1♀. 44: 18.I.2002, 1♂. 45: 18.I.2002, 3♀♀. 46: 18.I.1002, 4♂♂ 2♀♀. 47: 17.I.2002, 1♀. 48: 19.I. 2002, 1♀. 49: 17.I.2002, 1♂. 50: 17.I.2002, 1♀. 51: 1.I.1995, 1♂ 4♀♀, 2.I.1995, 6♀♀. 52: 11.I.2002, 1♂.

***Incasemidalis chilensis* MEINANDER, 1990**

A species known only from two male specimens collected in Chile (Santiago: El Portezuelo and Atacama: Los Loros) in September - October, at 521-943m, and it is the only one of the four known species of this genus with dark spotted wings (MONSERRAT 1989; MEINANDER 1990).

A single specimen, in very bad condition, collected in Argentina, and probably in very different ecological conditions (not autochthon Río Negro riverside bush) is assigned to this species, due to the fact that it also has spotted wings. The peritrophic membranes of the specimen studied contained portions of unidentified arthropods and fungi hyphen and spores.

Studied material: 20: 3.XII.2001, 1♀ (?) on *Crataegus monogyna* JACQ., Rosaceae.

Discussion

Due to the special ecological and environmental conditions so particular to the studied areas - with a realtively short placid environmental period, a very strong solar radiation, a marked deforestation, a poverty and uniformity in its environments, as well as the very harsh climatic conditons (markedly xeric in Coquimbo, and with presence of strong and persistent winds in Patagonia and Tierra del Fuego) - not too much results would be expected trying to collect a such sensible to the wind and particularly scarce in entomological prospecting group of insects.

However, we collected many specimens (552) found in 52 localities, practically all where we have prospected. According to the bibliographical data (MEINANDER 1972, 1974, 1990) and the current contributed information, we can conclude that the southern limit to the geographical distribution of this family in the South American continent goes beyond parallel 54° S, some species as *Semidalis kolbei* ENDERLEIN, 1906 with a very wide latitudinal range, but some other as *Pampoconis latipennis* MEINANDER, 1972 with a scarce latitudinal distribution amplitude (40°56' - 42°35'S).

Most of the collected species seem to be very generalistic in their plant substrate, especially *Semidalis kolbei* ENDERLEIN, 1906, which seems to have very numerous populations, but other species, probably as *Incasemidalis chilensis* MEINANDER, 1990 or *Stangesemidalis subandina* GONZALES OLAZO, 1984 can be much more selective in their plant preferences.

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Literaturbesprechung

BERMINGHAM, E., DICK, C.W. & MORITZ, C. (eds.) 2005: Tropical Rainforests. Past, Present, and Future. - The University of Chicago Press, Chicago. 745 S.

Das Konzept zu diesem Buch entstand während eines Symposiums "Rainforests: Past and Future", das 1998 in Cairns, Australien abgehalten wurde. Es handelt sich hier aber nicht um einen Tagungsband, sondern i.w. um Beiträge von Autoren, die nach dem Symposium bis Mai 2003 von diesen speziell angefordert wurden. Die Grundidee besteht darin, die Ebene der Kommunikation und Zusammenarbeit von Evolutionsbiologen und Ökologen, die sich mit dem Studium tropischer Regenwälder beschäftigen, zu verbessern. Gegliedert ist dieses Buch in drei (ungleiche) Teile: 1) Evolutionäre und ökologische Determinanten der Diversität in tropischen Regenwäldern, 2) Multidisziplinäre Perspektive eines ganzheitlichen Regenwaldsystems: die australischen feuchten Tropen, 3) Die Zukunft der Regenwälder.

Teil 1 beschreibt also vor allem allgemeine ökologische und evolutionsbiologische Einflüsse auf die Artendiversität in Regenwäldern, unter Berücksichtigung zeitlicher und geographischer Maßstäbe. Der 2. Teil fokussiert die australischen feuchten Tropen, beginnend mit "Ursprung und Evolution der australischen östlichen Hochländer", über "Auswirkungen des Klimawechsels" bis hin zur "Biodiversität von Süßwasser-Invertebraten". Der dritte Teil scheint mehr eine "Alibi-Funktion" zu haben und passt auf den ersten Blick nicht wirklich zum Gesamtkonzept. Allerdings spielen Politik, Menschen und Naturschutz eine immens wichtige Rolle, so dass evolutionäre und ökologische Prozesse nicht isoliert davon betrachtet werden können. Die letzten beiden Kapitel analysieren konkret die Situation in Südostasien und die "Zukunft des Amazonas".

"Tropical Rainforests" ist eine fantastische Synthese aus Evolution, Ökologie und Naturschutz, geschrieben auf fachlich sehr hohem Niveau mit brandaktuellen Beiträgen, verfasst von international anerkannten Spezialisten. R. GERSTMEIER

LEATHER, S. (ed.) 2005: Insect Sampling in Forest Ecosystems. - Blackwell Publishing, Malden-Oxford-Carlton. 303 S.

Dieses Buch liefert einen kompakten Einstieg für ökologische Untersuchungen an Insekten in Wald-Ökosystemen. Interessant sind die Kapitel über Insektensammeln in Wurzeln und wassergefüllten Baumlöchern. Ansonsten wird man in vielen Fällen auf Spezialliteratur zurückgreifen müssen. Bessere Illustrationen bietet hier auch im deutschsprachigen Raum die "Freilandökologie" von MÜHLENBERG. Sampling Design und Statistik werden ebenfalls nur angedacht. Insgesamt hätte man sich hier etwas mehr gewünscht. R. GERSTMEIER

COX, C.B., & MOORE, P.D. 2005: Biogeography. An Ecological and Evolutionary Approach. - Blackwell Publishing, Malden-Oxford-Carlton. 428 S.

Die 7. Ausgabe dieses außergewöhnlichen Lehrbuches der Biogeographie hat wieder einige Neuheiten und Änderungen zu bieten. Erstmals gibt es ein Kapitel über die Historie der Biogeographie, die Umsetzbarkeit der Theorie der Inselbiogeographie auf Naturreservate wird diskutiert, ein neues Kapitel über marine Biogeographie wurde eingefügt, der Einsatz der Molekularbiologie für biogeographische und evolutionäre Fragestellungen wird vorgestellt, es gibt eine neue Sektion über die Biogeographie parasitärer Krankheiten

und "moderne" Aspekte der Phylogeographie, cladistischer Biogeographie und Panbiogeographie werden diskutiert. Dieses Buch ist ein gutes Beispiel dafür, wie auch ein Standardwerk ständig verbessert und aktualisiert werden kann. Eine überaus kompetente und empfehlenswerte Einführung in eine heute leider (in Mitteleuropa) etwas vernachlässigte Disziplin der Biologie. R. GERSTMEIER

BEGON, M., TOWNSEND, C.R. & HARPER, J.L. 2005: Ecology. From Individuals to Ecosystems. - Blackwell Publishing, Malden-Oxford-Carlton. 738 S.

Die 4. Auflage des "Begon" stellt keine "revolutionäre" Neuerung dar, Inhalte und Konzeption wurden im wesentlichen beibehalten, es gibt allerdings drei neue Kapitel über angewandte Ökologie, "Randnotizen" (evt. als "take-home message gedacht), Zusammenfassungen aller Kapitel, über 800 neue Zitate wurden eingearbeitet und dabei trotzdem der Gesamtumfang des Buches um 15% verringert. Drei große Teile "Organismen", "Art-Interaktionen" sowie "Gemeinschaften und Ökosysteme" bilden das Grundgerüst. Anhand dieser Säulen werden alle Aspekte einer modernen Ökologie dargestellt.

"Ecology" wird weiterhin unter den Standard-Lehrbüchern der Ökologie die "pole position" halten. R. GERSTMEIER

PRIMACK, R. & CORLETT, R. 2005: Tropical Rainforests. An Ecological and Biogeographical Comparison. - Blackwell Publishing, Malden-Oxford-Carlton. 319 S.

Die populäre Betrachtungsweise eines tropischen Regenwaldes als gigantisches Wirrwar durchnässter Bäume, Affen, Vögel und Wildkatzen ist Mythos. Die Regenwälder verschiedener tropischer Regionen sind einzigartig, auch wenn es oberflächlich Ähnlichkeiten gibt. Dieses Buch geht von diesem Ansatz aus und bietet nach einer allgemeinen Einführung in Klima, biogeographische Historie und Umweltparameter den Einstieg über die Organismengruppen, angefangen von den Pflanzen, über die Primaten bis hin zu den Insekten. Auch das letzte Kapitel über die Zukunft der Regenwälder ist nur die logische Konsequenz dieses Konzeptes: Naturschutz muss spezifisch auf die jeweiligen Regionen abgestimmt sein. Ein interessantes Buch mit zahlreichen Fotos (farbig und SW) und Grafiken, v.a. für den Einsteiger in die Regenwald-Ökologie konzipiert.

R. GERSTMEIER

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